

REMARKS

Below, the applicant's comments are preceded by related remarks of the examiner set forth in small bold font.

Claims 1-16:

5. Applicant's arguments filed 06/23/2005 have been fully considered but they are not persuasive.

...

As per the argument for Claims 1 and 11:

The Applicant states on page 11 of the Remarks "Christensen does not disclose or suggest "moduloing each segment by a generator polynomial to obtain a remainder for each of the plurality of segments," as now recited in amended claim 1". The Applicant further states "Moduloing each segment by a generator polynomial" (as recited in claim 1) is different from calculating the CRC of each segment. Calculating a partial CRC for an ATM cell involves multiplying the ATM cell by X^{n-k} prior to dividing the cell by a generator polynomial, where " $n-k$ " is the degree of the generator polynomial". The Examiner contends that by the Applicant's own admittance on page 5, lines 8-18 of the specification, that the message M (ATM cell) is multiplied by $X^{n*(s-1)} (X^{n-k})$ before moduloing (dividing the cell by a generator polynomial). As a result the Examiner assets that Christensen does teach "moduloing each segment by a generator polynomial to obtain a remainder for each of the plurality of segments".

It is the Examiner's conclusion the independent claims 1 and 11 are not patentably distinct or non-obvious over the prior arts of record namely, Christensen et al. (US-5951707). Therefore, the rejection is maintained. Based on their dependency on independent claims 1 and 11, claims 2-10, and 12-16, respectively, stand rejected.

...

7. Claims 1-6, 8, 10, 11-15, 17-25, 35-37, 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Christensen et al. (US-5951707), hereinafter Christensen.

Claims 1 and 11:

...

"moduloing each segment by the generator polynomial to obtain a remainder for each of the plurality segment"

Christensen teaches the processor calculates the packet CRC for a packet from the partial CRCs associated with ATM cells of the packet, where each partial CRC associated with an ATM cell of a packet is multiplied by an appropriate R , where R , represents a fixed remainder. (Col. 2, 11. 9-13).

The examiner appears to contend that "moduloing each segment by a generator polynomial," as recited in claim 1, is equivalent to calculating the CRC of each segment, as disclosed in Christensen. Applicant disagrees. The examiner has mischaracterized page 5, lines 8-18 of the applicant's specification. The equation

$$M = M_{s-1} * X^{n*(s-1)} + M_{s-2} * X^{n*(s-2)} \dots + M_1 * X^{n(1)} + M_0 * X^{n(0)}$$

describes the relationship between the message M and the message segments $M_{s-1}, M_{s-2}, \dots, M_1$, and M_0 , and does not mean that the message M or any of the message segments M_s is multiplied by X^{n*s} before moduloing.

For example, as described in page 8, lines 4-15 of the applicant's specification, if the message $M = 10111000$ is divided into two segments, then the message segments are $M_1 = 1011$ and $M_2 = 1000$, and moduloing each segment by the generator polynomial $P=1001$ to obtain a remainder for each segment is performed by

$$R_1 = M_1(\text{modulo})P = 1011 \text{ (modulo) } 1001, \text{ and}$$
$$R_0 = M_0(\text{modulo})P = 1000 \text{ (modulo) } 1001,$$

where the modulo operation can be performed by division:

$$\begin{array}{r} 0001 \\ \hline 1001 \mid 1011 \\ 1001 \\ \hline 010 = R_1 \end{array} \quad \begin{array}{r} 0001 \\ \hline 1001 \mid 1000 \\ 1001 \\ \hline 001 = R_0 \end{array}$$

to obtain the remainders $R_1 = 010$ and $R_0 = 001$. As can be seen from the above computation, the message segments M_1 and M_0 are not multiplied by X^{n-k} before dividing by the generator polynomial, where X^{n-k} is the degree of the generator polynomial. This is different from Christensen's method of obtaining the CRC of each ATM cell, in which each ATM cell is multiplied by X^{n-k} prior to dividing by the generator polynomial.

Claims 11 and 35 are patentable for at least similar reasons as claim 1.

Claims 2-10, 12-16, and 36-38 are patentable for at least the same reasons as the claims on which they depend.

Claims 17-26

5. ...

As per the arguments for Claims 17 and 23:

The Applicant states on page 12 of the Remarks “Christensen does not disclose or suggest “multiplying each segment by a segment-constant based on a generator polynomial to obtain a plurality of segment-remainders,” as recited in claim 17. The Examiner contends that Christensen teaches “multiplying each segment by a segment-constant based on a generator polynomial to obtain a plurality of segment-remainders” as outlined in col. 4, line 55 to col. 5, line 4 in reference to calculating the Fixed Remainder Table (to obtain a plurality of segment-remainders). The Applicant is also referred to col. 6, line 53 to col. 8, line 43.

It is the Examiner’s conclusion that independent claims 17 and 23 are not patentably distinct or non-obvious over the prior arts of record namely, Christensen et al. (US-5951707). Therefore, the rejection is maintained. Based on their dependency on independent claims 17 and 23, claims 18-22, and 24-26, respectively, stand rejected.

The applicant notes that “a segment” is different from “a CRC of a segment.”

Christensen discloses multiplying the CRC of an ATM cell by a segment-constant (see col. 5, lines 5-22 of Christensen). Christensen does not disclose or suggest multiplying the ATM cell by a segment-constant. If the examiner contends that the “segment” and “segment-constant” of claim 17 correspond to the “ATM cell” and “fixed remainder” of Christensen, respectively, then Christensen discloses “multiplying the CRC of each segment by a segment-constant,” but does not disclose or suggest “multiplying each segment by a segment-constant,” as recited in claim 17.

Claims 23 and 39 are patentable for at least similar reasons as claim 17.

Claims 18-22, 24-26, and 40 are patentable for at least the same reasons as the claims on which they depend. Moreover, these claims add additional distinctive features. For example, claim 20 recites “multiplying each segment by a segment-constant based on a generator polynomial (P) comprises multiplying each segment by a segment-constant based on a field extension F of the generator polynomial P, wherein F is equal to P multiplied by an extender Q.” Christensen does not suggest at least these features of claim 20.

5. ...

As per the argument for Claims 15 and 25:

The Applicant argues on page 10 of the Remarks that “Claims 15 and 25 do further limit independent claims 11 and 23, respectively. For example, Claim 11 recites “a modulo unit to modulo the accumulated-remainder by a generator polynomial to obtain the cyclic redundancy code for the message,” whereas claim 15 recites “wherein the modulo unit

divides the accumulated-remainder by the generator polynomial to obtain the cyclic redundancy code.” Note that the term “divide” (recited in claims 15 and 25) is not the same as the term “modulo” (recited in claims 11 and 23).” The Examiner respectfully disagrees and contends that, broadly interpreted, that the term “divide” is the same as the term “modulo” since moduloing is the same as two’s complement division. Therefore, the objection is maintained.

...
6. Claims 15 and 25 are objected to because these claims do not further limit the independent claims in which they are dependent on, claims 11 and 23 respectively. Appropriate correction is required.

Applicant disagrees. The term “modulo” as used in this application is broader than the term “divide.” As described in page 5, lines 19 to 31, moduloing a segment by a generator polynomial can be performed using at least two methods. One method is to divide the segment by the generator polynomial. Another method is to multiply the segment by a reciprocal approximation for the generator polynomial. Therefore, claims 15 and 25 do not further limit independent claims 11 and 23, respectively.

Cancelled claims have been cancelled without prejudice. The applicant reserves the right to pursue those claims in a continuing application.

Any circumstance in which the applicant has addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner. Any circumstance in which the applicant has made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims. Any circumstance in which the applicant has amended a claim does not mean that the applicant concedes any of the examiner’s positions with respect to that claim or other claims.

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Enclosed is a \$120.00 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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